

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1 through 28. (Canceled)

29. (Previously Presented) A method of manufacturing a gear comprising:

providing a die assembly having an upper die, a lower die and a mandrel, one of the upper die and the lower die defining a plurality of gear teeth, the upper and lower dies forming a closed die that defines a die cavity, the mandrel having a plurality of splines formed thereon, the mandrel being received into the die cavity;

providing an insert portion formed of a solid substantially void-free metal, the insert portion having a hollow body and a flange, the hollow body having opposite axial end faces and an interior surface into which a plurality of mating splines are formed, the flange extending circumferentially about the hollow body between the opposite axial end faces of the hollow body;

positioning the insert portion onto the mandrel such that at least a portion of the mating splines of the insert portion matingly engage the splines formed on the mandrel;

positioning a preform portion within the die cavity such that the perform portion extends circumferentially about at least a portion of the insert portion, the perform portion being formed of a solid substantially void-free metal; and

pressing the preform portion between the upper and lower dies in a pressing direction to form a gear in single stroke such that a plurality of gear teeth are formed on the preform portion, the perform portion deforming in at least one axial direction, a radially inward direction

and a radially outward direction during the single stroke such that the preform portion is deformed about the opposite axial sides of the flange so that the flange is embedded into the preform portion and the perform portion is fixedly engaged to the insert portion.

30. (Previously Presented) The method of Claim 29, wherein the perform portion is heated prior to pressing the preform portion between the upper and lower dies.

31. (Previously Presented) The method of Claim 29, wherein a material is placed between the insert portion and the preform portion prior to the pressing the preform portion between the upper and lower dies, the material being configured to bond the insert portion to the preform portion.

32. (Previously Presented) The method of Claim 31, wherein the material is selected from a group consisting of brazing materials and soldering materials.

33. (Canceled)

34. (Currently Amended) The method of Claim 29, wherein at least one locking feature is formed on the insert portion, the locking feature being formed such that the preform portion moves radially inward into the at least one locking feature when the preform portion is pressed between the upper and lower dies to thereby inhibit radial movement of the insert portion relative to the preform portion.

35. (Previously Presented) The method of Claim 34, wherein the at least one locking feature is formed on the flange.

36. (Previously Presented) The method of Claim 35, wherein the at least one locking feature includes a plurality of scallops.

37. (Currently Amended) The method of Claim 29, wherein the flange includes a first axial side that is generally transverse to a longitudinal axis of the insert portion, and a second axial side that is opposite the first side, the second axial side tapering relative to the first axial side such that a radially outward side of the flange is thinner than a radially inward side of the flange.

38. (Previously Presented) The method of Claim 29, wherein the flange includes a first annular surface, a second annular surface and an outer surface that is coupled to the first and second annular surfaces, and wherein at least one of the first and second annular surfaces is tapered so that a thickness of the flange decreases with increasing distance from the hollow body.

39. (Previously Presented) A method of manufacturing a gear comprising:
providing a die assembly having an upper die, a lower die and a mandrel, one of the
upper die and the lower die defining a plurality of gear teeth, the upper and lower dies forming a
die cavity, the mandrel having a plurality of splines formed thereon, the mandrel being received
into the die cavity;

providing an insert portion formed of a solid substantially void-free metal, the insert
portion having a hollow body and a flange, the hollow body having opposite axial end faces and
an interior surface into which a plurality of mating splines are formed, the flange extending
circumferentially about the hollow body between the opposite axial end faces of the hollow
body, the flange includes a first annular surface, a second annular surface and an outer surface
that is coupled to the first and second annular surfaces, and wherein at least one of the first
and second annular surfaces is tapered so that a thickness of the flange decreases with
increasing distance from the hollow body;

positioning a preform portion about the mandrel, the preform portion being formed of a
solid substantially void-free metal;

positioning the insert portion onto the mandrel such that at least a portion of the mating
splines of the insert portion matingly engage the splines formed on the mandrel; and

pressing the preform portion between the upper and lower dies in a pressing direction to
form a gear in single stroke such that a plurality of gear teeth are formed on the preform
portion, the preform portion deforming in at least one axial direction, a radially inward direction
and a radially outward direction during the single stroke such that the preform portion is
deformed about the opposite axial sides of the flange so that the flange is embedded into the
preform portion and the preform portion is fixedly engaged to the insert portion.